

REMARKS

The Applicants request reconsideration of the rejection.

Claims 1, 4 and 6-9 will be pending upon entry of the foregoing amendments.

Claims 1 and 4 were rejected under 35 U.S.C. §102(b) as being anticipated by Rosenschein et al., US 6,113,558 (Rosenstein). The Applicants traverse as follows:

As disclosed, the present invention is directed to a therapeutic ultrasound system which secures thermal coagulation, by making it possible to freely set a continuous insonation time of ultrasound treatment from the point of time when the temperature causes cavitation in the focal point region. This object is achieved for treatment of a tumor, for example, without increasing the intensity of ultrasound to be applied, and without excessive side-effects due to overheating.

As claimed in amended Claim 1, the therapeutic ultrasound system includes an ultrasonic transducer which irradiates a therapeutic ultrasound on a region to be treated; an input unit to which information including a continuous insonation time of the therapeutic ultrasound is input; a control unit to which the information is input, and which controls irradiation of the therapeutic ultrasound; a sound detector which detects an audible sound generated in the region to be treated, during

exposure of the ultrasound; a waveform analyzing unit which obtains a cross-correlation function between a waveform of the detected audible sound and a typical sound of an audible sound previously obtained in a region to be treated; and a unit which detects a point of time of detection of the audible sound using the cross-correlation function and which sends a signal expressing detection of the audible sound to the control unit, wherein the ultrasonic transducer irradiates the therapeutic ultrasound in the continuous insonation time from the point of time of detection of the audible sound by the sound detector. Amended Claim 4 is similar, but instead of claiming a waveform analyzing unit, Claim 4 recites a signal processing unit which obtains a FFT spectrum of the audible sound before the start of irradiation of therapeutic ultrasound and a FFT spectrum of the audible sound after the start of irradiation. Further, Claim 4 recites that the "unit" detects a point of time of detection of the audible sound by comparing the FFT spectrum before the start of irradiation with the FFT spectrum after the start of irradiation.

Rosenschein is directed to a pulsed mode lysis method for treatment of certain medical conditions such as cancer. Rosenschein employs a microphone and a frequency analyzer to perform measurement of acoustic emissions and obtains feedback

regarding whether cavitation is occurring. Rosenschein also teaches to provide a warning signal if full power is achieved without cavitation being detected. Rosenschein does not disclose or fairly suggest the claimed waveform analyzing unit which obtains a cross-correlation function between a waveform of the detected audible sound and a typical waveform of an audible sound previously obtained in a region to be treated, or the unit which detects a point of time of detection of the audible sound using the cross-correlation function (Claim 1), or the signal processing unit which obtains the FFT spectrum of the audible sound before and after the start of irradiation, and the unit which detects the point of time of detection of the audible sound by comparing the two FFT spectrums (Claim 4); wherein the ultrasonic transducer irradiates the therapeutic ultrasound on the region to be treated in a continuous insonation time from the point of time of detection of the audible sound (Claims 1 and 4).

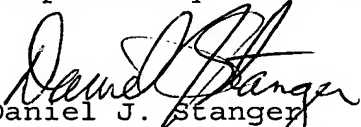
Claims 2 and 3 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rosenschein, taken individually (Claims 2) or in view of Acker et al. US 6,508,774 (Acker) (Claim 3). Claims 2 and 3 have been canceled without prejudice, to focus prosecution on Claims 1 and 4, and on new Claims 6-9. Nevertheless, Acker also fails to disclose or fairly suggest the limitations noted above. Accordingly, the

combination of Rosenschein and Acker fails to disclose the claimed invention.

New Claims 6-8 are dependent claims that provide additional patentable details of the unit claimed in Claim 4. New Claim 9 is an independent claim which includes, among other limitations, a signal processing unit which obtains a FFT spectrum of a detected audible sound, a waveform analyzing unit which obtains a cross-correlation function between the FFT spectrum and a typical FFT spectrum, and a unit which detects a point of time of detection of the audible sound using the cross-correlation function. Thus, Claims 6-9 are also patentable over Rosenschein and Acker, whether taken individually or in combination.

In view of the foregoing remarks and amendments, the Applicants request reconsideration of the rejection and allowance of the claims.

Respectfully submitted,


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